Soil Conservation

August 1977

U.S. Department of Agriculture

How It All Began 4

Keeping Windbreaks Up on the Farm 6

Indians Use Conservation Guides 12

From the Administrator

Districts Make Conservation Work

The acknowledged leader of America's soil conservation movement at the local level is the soil and water conservation district. The first was formed 40 years ago this month.

Today there are over 2,950 of these local districts operating in all 50 States, Puerto Rico, and the Virgin Islands. Under one name or another, they were created under district laws passed in each of our States—a remarkable achievement in itself.

Each is responsible for the conservation work within its boundaries. Together the districts practically cover the Nation.

Each district has signed a Memorandum of Understanding with the Secretary of Agriculture, spelling out the responsibilities of each party. Typically, the district agrees to set local priorities for soil and water conservation and erosion control and to make sure that its cooperative agreements with land users are carried out.

The Department of Agriculture pledges to cooperate with and assist the district in this work, through its various agencies. This means that Soil Conservation Service technical people work through the district, not around it.

There are many advantages to this arrangement. First, local people are more apt to respond to conservation guidelines and goals set by friends and neighbors than to the recommendations of a Federal Agency.

Second, district people are attuned to local customs and the state of the economy. They know how—and when—voluntary programs work best.

Third, they provide and secure non-Federal financial support for conservation.

Fourth, they help USDA employees to relate their knowledge and skills to local conditions. District governing boards know what is realistic and attainable.

In a nation as large as ours, with a diversity of climates and soil and water resources, it would have been impossible to write a single prescription for soil and water conservation. To work, the national conservation program had to have a local base, and the district provided the answer. And it is still the answer.

Mel Davis

August 1977, Vol. 43, No. 1

Soil Conservation is the official magazine of the Soil Conservation Service. The Secretary of Agriculture has determined that publication of this periodical is necessary in the transaction of public business required by law of the Department. Use of funds for printing *Soil Conservation* has been approved by the Director of the Office of Management and Budget through July 31, 1978.

Bob Bergland
Secretary of Agriculture

R. M. Davis, Administrator
Soil Conservation Service

Prepared in the Information Division
Soil Conservation Service
U.S. Department of Agriculture
Washington, D.C. 20013

Judith E. Ladd
Editor

Maryellen Bertram
Editorial Assistant

Christopher Lozos
Design Consultant

Reprint permission
Contents of this magazine may be reprinted without special permission. Credit is not required but is appreciated. Photos available on request.

Commercial names
Mention of commercial enterprises or brand names does not constitute endorsement or imply preference by the Department of Agriculture.

Subscriptions
$6.85 per year, $8.60 foreign. Single copy, 55 cents. Discounts of 25 percent on orders of 100 or more sent to the same address. Order directly from:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Cover:
Farmers and ranchers use windbreaks to reduce soil blowing, conserve moisture, control snow, and protect crops. Windbreaks in five Great Plains States will be counted by aerial photography. See pages 6 and 7.

Soil Conservation

Contents

From the Administrator 2

How It All Began 4
Frank H. Jeter, Jr.

What Is a District? 5

Windbreak Revival 6
Shirley Foster Fields

Measuring Windbreaks from the Air 7
Richard H. Gilbert

Tall Wheatgrass Barriers 8
Douglas B. Campbell

Fall Tillage Means Double Trouble 10
Duke Ponder and Dave Mackey

A Canoe Trip Through Indian History 12
Bud Reese

Planned Grazing: A Beautiful System 14
Doug Immekus

Long-Time Conservationists 15
Gene Warren
Michael M. Price

From Trash to Trail 18
Elesa K. Tanprasert

Rescuing Barley Square 19
Dale Allen

Conservation Classroom for Gun Club Instructors 20
Dick Barber

New Publications 22

Conservation Means "Liquid Assets" 23

Meetings 23

How It All Began

Forty years ago this month, history was made. North Carolina landowners, interested in fighting erosion, established the Nation's first soil conservation district.

by Frank H. Jeter, Jr.

When 30 Anson County, N.C., landowners started circulating a petition to try to improve their own and neighboring land in the late 1930's, they had no thought of making history. They were simply interested in fighting the erosion plaguing farmland in North Carolina's Southern Piedmont.

The petition's sponsors sought support for establishing a conservation district, defining its boundaries, and holding a referendum of landowners to determine their sentiments about the matter.

Upon completion, the petition was mailed to the State Soil Conservation Committee, itself recently established by the 1937 North Carolina General Assembly following passage of the State's Soil Conservation Districts Law.

The committee, after examining the petition, approved a referendum. The election left no doubts about how interested Anson County farmers were in improved erosion control. By a lopsided margin of 300 to 1, the establishment of the district was approved. An enterprising reporter for the Charlotte *Observer* sought out the lone

It was 1937 when Hugh Hammond Bennett, first Chief of the Soil Conservation Service, visited North Carolina to help local farmers make plans for developing the country's first conservation district.

farmer voting against the district and discovered that "the one negative voter, after the program was explained, changed his opinion."

On August 4, 1937, North Carolina Secretary of State Thad Eure made history when he signed the certificate establishing the Brown Creek Soil Conservation District (SCD) as the first in the State, the Nation, and the world. The actual charter was issued 10 days later.

The event rated large headlines in the State's daily and weekly press, and the news soon spread beyond the State. A newspaper article of the time written by William D. Lee, extension soil conservationist of North Carolina State, gave an apt, still timely definition of a soil conservation district and a clear, concise statement of its potential. Where the author fell short was in his prediction that the district would do away with government subsidies. He failed to foresee the need for State and Federal funds to adequately control erosion.

Once started, the district flourished as it does to this day. First Memorandums of Understanding were worked out with the Forestry Division of the North Carolina Department of Conservation and Development and with the Soil Conservation Service. Hugh Hammond Bennett, SCS Chief, had helped create the district movement including development of model enabling legislation, which was quickly enacted by a number of State legislatures across the Nation.

The first conservation plan in the first district was on the farm owned by the family of Dr. F. Y. Sorrell. It involved 246 acres and included plans for crop rotation on 121 acres; terracing on 114 acres; waterways (also identified as "meadow strips") on 2.7 acres; one wildlife planting; and considerable land planted in trees.

Another early conservation plan, on 248 acres belonging to J. M. Liles, included 180 acres of improved pasture, 159 acres in rotation, 150 protected by terraces, and an impressive 2,000 feet of border plantings to shelter and feed wildlife.

C. D. Griggs is the present chairman of the Brown Creek SCD board and a farmer in the county. His father was one of the first cooperators and he has nothing but praise for the district's accomplishments through the years.

"I don't know what we would have done without the district," he said. "The people were desperate in 1937, watching their land wash away, and not knowing where to turn or what to do about it.

"The district has been here to guide and direct us," said Griggs, "and, as a result, the face of the land has been changed and safeguarded. Cotton no longer is the major crop, and there has been a great deal of conversion to woodland, particularly loblolly pines."

No-till farming is very popular today, and the farmers' economic prospects are vastly improved, he says.

The farmers of Anson County in 1937 undoubtedly felt gratified that a concerted program to curb severe soil erosion on their land was underway. But they may not have been aware of the historic significance of the step they had taken together.

Mr. Jeter is public information officer, SCS, Raleigh, N.C.

Over the years, SCS and conservation district people have worked with landowners in solving a variety of conservation problems, such as converting gullies to grassed waterways.

What Is a District?

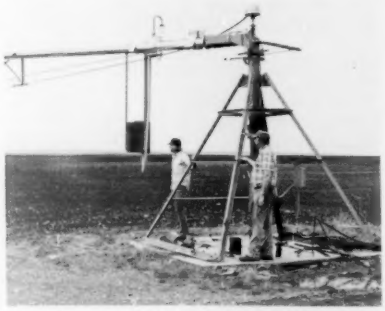
The following newspaper article was written by William D. Lee, extension soil conservationist of North Carolina State, soon after the first soil conservation district was established.

"What is a soil conservation district? Essentially it is a cooperative association of landowners who will be engaged in carrying out a conservation program. The people involved will help solve their own problems. It will be a process of human as well as material conservation. Since the operation of such a program can be genuinely effective only if it meets the wholehearted support of land operators, each step in setting up the district has been by petition and referendum of the people themselves. Control and direction come from the people . . . for their interests. This permits an almost complete elimination of the tendency toward governmental bureaucracy, and also the doing away of government subsidies."

Windbreak Revival

Windbreaks are only one of several conservation measures that this North Dakota "Farm Family of the Year" has applied on its 1,800-acre farm.

by Shirley Foster Fields



Wheat farmer Lloyd Klabunde inspects a dying Siberian elm tree—one of hundreds he planted 20 years ago in windbreaks that have protected his crops from North Dakota's high winds. He is replacing the elms with longer-lived green ash trees. Bottom, Klabunde and his son, Wayne, check their pivot irrigation system before applying water to flax and wheat fields.

"The wind is mighty strong here all year round. It's mid-July, and it's still blowing at 30 miles an hour. We farmers place a high value on our windbreaks."

So says North Dakota wheat grower Lloyd P. Klabunde who is cultivating his soil in mid-summer to make ready for next spring's windbreak planting of green ash, caragana, American plum, juneberry, and chokecherry trees.

Klabunde's 7 miles of field windbreak Siberian elms are dying, probably of old age. Within the next 2 years, he will have replanted 2 of the 7 miles with a single row of green ash, a hardy long-lived tree.

"Cultivation comes first, a full year before planting," he says. "This eliminates practically all weeds and assures plenty of moisture when the new trees will need it most—immediately after planting."

Klabunde's new farmstead windbreak will be a six-row planting. "First, caragana shrubs in the row farthest from the house, then four rows of trees."

He will plant a single row of fruit trees and shrubs nearest to the house—plum, juneberries, and chokecherry. The juneberry, he points out, is an early bearing shrub. Its fruit resembles the blueberry.

Windbreaks are only one of several conservation measures that Klabunde has applied to his 1,800-acre farm. He has been a cooperator with the West McLean Soil Conservation District (SCD) since 1959, and in that same year, he signed his first Great Plains Conservation Program contract. Under the contract, the North Dakotan planted his original windbreaks; converted 115 acres of cropland to irrigated pastures; applied wind stripcropping to approximately 1,500 acres of wheat, flax, and summer fallow; and planted 7 acres of grassed waterways to prevent soil erosion.

The newest improvements on his land are two center-pivot sprinkler irrigation systems, the first in his county. They were developed with technical assistance from the West McLean SCD to irrigate 250 acres of wheat, soybeans, and flax. His 260-foot-deep well attaches to both systems, pumping 1,000 gallons of water every minute. He operates each of the systems an average of 700 hours a year.

Crop rotation is an integral part of Klabunde's overall conservation plan. From 1972 to 1975, he switched to irrigated alfalfa on cropland previously planted in wheat and averaged 7 tons an acre. Twenty acres of dryland alfalfa yielded 1½ tons per acre in 1975.

Klabunde was winner of the 1976 Farmers Home Administration national Farm Family of the Year award. He and his wife, Lorraine, started farming on 320 acres of rented land in McLean County, N. Dak., in 1946.

Today they live in a recently remodeled home and farm 1,800 acres, 16 miles west of Garrison.

Looking back, Klabunde sees conservation as a continuing process that is as essential to the productivity of his land as the loans that enabled him to get started in the first place. When he evaluates conservation's overall worth, the North Dakotan speaks with blunt simplicity: "It has stopped wind and water erosion on my land."

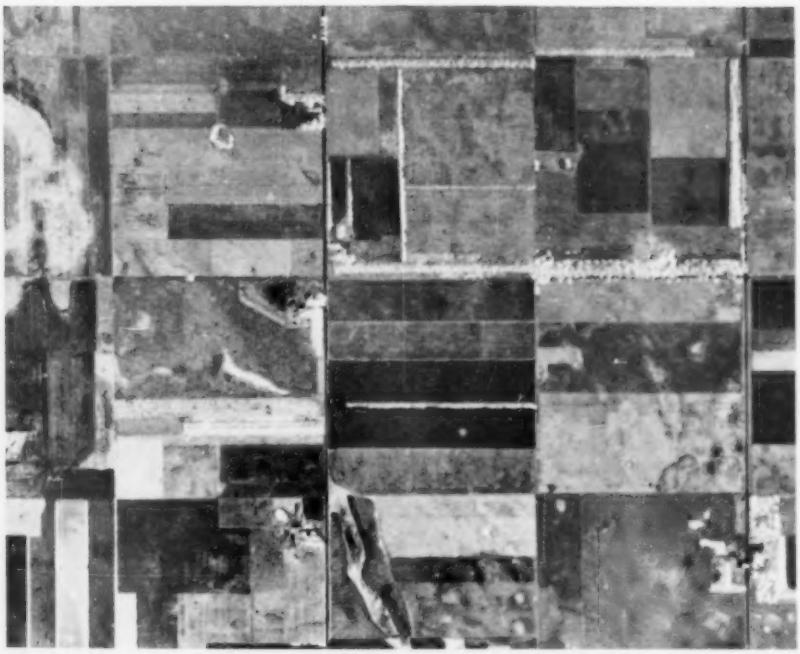
Ms. Fields is a public information officer, Information Division, SCS, Washington, D.C.

Measuring Windbreaks from the Air

Windbreaks are vital to conservation in the Great Plains. SCS will soon know how many field windbreaks are present in five Plains States, thanks to an aerial inventory.

by Richard H. Gilbert

In infrared photographs, green vegetation appears light gray or white. Field windbreaks in Dickey County, N. Dak., were photographed for SCS from 15,000 feet.



Counting a million trees would be an arduous task, indeed, if we had to walk the ground and make note of each row. But technology has given us an easier, and far less expensive, way.

Beginning in a few weeks, the Soil Conservation Service will inventory windbreak tree plantings in the Nation's five major windbreak States: Kansas, Nebraska, North Dakota, Oklahoma, and South Dakota. Data-gathering will be simplified through remote sensing methods using aerial photographs and photo-interpretation.

The inventory will be the first multi-State windbreak survey to derive information exclusively from high-altitude aerial imagery.

SCS photo interpretation experts will locate, measure, and tabulate windbreaks on 3,375 sections of land in the five States—selected because they contain about three-fourths of all field windbreaks in the Great Plains. A report on each State will be published in October 1978.

The 9-month remote-sensing study will cost $57,000, less than one-third the amount an "on the land" survey would cost.

The inventory follows a 1975 General Accounting Office (GAO) report calling for action to discourage removal of windbreaks in the Great Plains. The GAO report noted the need for accurate and up-to-date information on the number of field windbreaks in the region, the amount of removals during recent years, and the reasons for the removals.

During a recent pilot study of nine counties in the five States, SCS determined that the remote sensing method is 95 percent accurate in locating and measuring windbreaks. Comparing aerial photos taken in 1970 and 1975, SCS's remote sensing team measured farmstead and field windbreaks on 230 sections of land. The pilot study showed that the average reduction of field windbreaks in the nine counties was less than one percent per year. The upcoming, expanded study will determine whether this preliminary finding is typical of tree removals throughout the five major windbreak States.

The U.S. Government has been involved in tree planting in the Great Plains States for more than 100 years. In 1873, the Timber Culture Act offered homesteaders 160 acres of land if they would plant 40 of those acres in trees. The act was repealed in 1893, but not before millions of trees had been planted.

During the Dust Bowl days of the 1930's, the government again planted trees in the Great Plains. Under the Prairie States Forestry Project of 1935, more than 200 million trees were planted in North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas. When the project ended in 1942, more than 238,000 acres of windbreak trees had been planted by the Works Progress Administration and the Civilian Conservation Corps. The combined length of the windbreaks exceeded 18,000 miles.

Mr. Gilbert is leader of the Remote Sensing Team, Land Inventory and Monitoring Division, SCS, Reston, Va.

A farmer in Montana has found that tall wheatgrass barriers conserve moisture by trapping snow, protect against wind erosion, and decrease moisture evaporation in summer.

Tall Wheatgrass Barriers

Snow trapped by tall wheatgrass on Mohn's farm near Flaxville, Mont., approaches the tops of 3½-foot barriers.

by Douglas B. Campbell

Farmer Mohn has discovered that tall wheatgrass barriers hold moisture and reduce erosion and evaporation from wind.

"Summer fallowing wastes moisture; tall wheatgrass barriers and continuous cropping conserve it," according to Donald R. Mohn, a farmer near Flaxville, Mont.

Mohn, who farms 1,200 acres of sandy cropland in Daniels County, has tall wheatgrass barriers in various stages of establishment on his land.

He has found that tall wheatgrass not only traps snow and conserves moisture, but that it also produces other valuable benefits. One is increased protection against wind erosion; another is the decrease in evaporation of moisture by summer winds.

Mohn learned about the barriers from the Agricultural Research Service's Northern Plains Soil and Water Research Center, Sidney, Mont., which works closely with local farmers and the Soil Conservation Service. SCS has been recommending wheatgrass barriers since 1971 for certain locations, including central and eastern Montana. The practice has been finding increasing favor with farmers in those areas.

Mohn's barriers—two rows of tall wheatgrass spaced 3 feet apart—are separated by 67 feet of cropland. He chose this strip width to allow for two passes with his drill.

Mohn's first planting of tall wheatgrass barriers in 1971 failed. He blames the failure on inadequate seedbed packing and soil crusting, which killed the seedlings before they reached the surface.

The following year, Mohn modified a "pony" drill for planting wheatgrass. The drill has rubber tires for packing and a depth control that prevents the seed from being placed more than 1 inch deep. Spring planting with this drill has resulted in satisfactory stands.

Since his first successful planting in 1972, he has planted additional barriers each year.

After 3 years of continuous cropping on the fields where barriers were first established, Mohn found that overall farm production was greater than it was with summer fallowing.

He grows winter wheat and spring wheat in alternate years. The yields of both have been good, even though winter wheat is not commonly grown in northeastern Montana.

Mohn also grows hay between some of his tall wheatgrass barriers, seeding alfalfa in strips where the sandy soil blew easily. Mohn discovered the hay yields were surprisingly good because of the additional moisture from trapped snow. In some years he has taken a second cutting—unusual for dryland hay in eastern Montana.

By rotating winter wheat and spring wheat and applying herbicides, Mohn has reduced weeds associated with continuous cropping. The tall wheatgrass is not affected by herbicides used to control broadleaf weeds.

Wild oats and pigeongrass, however, have increased. To counter this problem, Mohn plans to include safflower in his crop rotation. Weedy grasses can then be controlled with herbicides that would kill small grains.

Mohn cultivates his barriers twice a year with a modified toolbar. He also fertilizes them with nitrogen to promote growth and maintain the height of the tall wheatgrass. Of course, thicker and taller barriers will trap more snow.

The barriers and continuous cropping have almost eliminated wind erosion, Mohn said. Strips to be planted to spring wheat are worked in the fall to leave them in a roughened condition. This provides further protection against blowing during the winter and early spring.

Selected as Outstanding Farmer of 1976 by the Daniels County Conservation District, Mohn is conscientious about saving soil and moisture. On some of his hayfields where tall wheatgrass barriers have not been established, he has used a blade on his tractor to "windrow" snow. The rows act as a snow fence, trapping enough additional moisture to produce a second cutting of hay.

Mohn has even windrowed snow away from his tall wheatgrass barriers to distribute the snow more evenly across the strips of cropland. He is sure that increased grain yields more than pay for the time and fuel used, although he has not yet collected data to prove it.

The Montana farmer admitted that it takes more care to farm around the barriers. There also are higher production costs for continuous cropping, such as herbicides and fertilizer.

"In the right place, and with extra management and care, tall wheatgrass barriers are definitely an asset in my kind of farming," Mohn said.

Mr. Campbell is range conservationist, SCS, Glasgow, Mont.

Fall Tillage Means Double Trouble

by Duke Ponder
and Dave Mackey

More farmers need to be alerted to the fact that fall tillage in cropland fields can cause a double loss—soil and wildlife.

A large portion of the diet of wildlife in many States is rowcrop grain left in fields after harvest. Corn stalks, milo stubble, and other vegetation also provide cover for wildlife as it feeds on waste grain.

The same residue will provide soil surface cover to soften the force of falling raindrops and help absorb moisture, cutting down on soil erosion.

In Missouri, however, the following tillage practices are fairly common between October and December—with these disastrous results for wildlife and soil conservation:

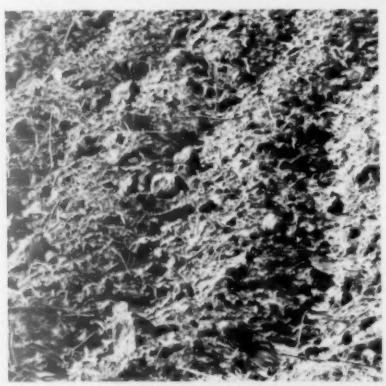
- moldboard plowing—100 percent of crop residues covered;
- single disking—60 percent of residues covered;
- single trip with field cultivator—40 percent covered;
- single trip with chisel plow—30 percent covered.

With no-till, of course, there was no loss of residues.

Mr. Ponder is field service agent, Missouri Department of Conservation, Kirksville, Mo.
Mr. Mackey is district conservationist, SCS, Edina, Mo.

Like most techniques to combat erosion, good soil conservation practices are also good for wildlife populations.

Slogan of Missouri campaign against fall plowing is: "When soil is bare, wildlife's rare."



Baling removes residues from fields. Besides supporting wildlife, "trash" left on fields may save tons of soil per acre.

Corn residues left on ground during winter provide high energy diet for Missouri's resident game species.

Canada geese use harvested cornfield as feeding area on their fall trip South.

The Mashpee Wampanoag Tribal Council turned back the clock 300 years in dedicating a historic Indian canoe passage in southeastern Massachusetts.

by Bud Reese

A Canoe Trip Through Indian History

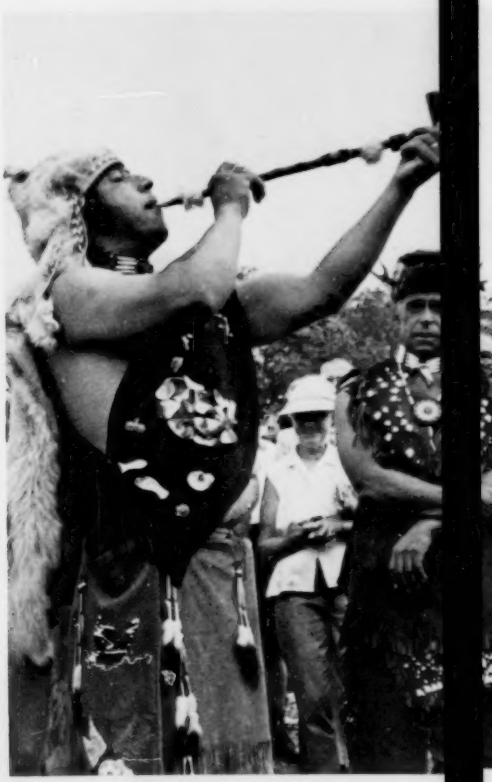
Two Wampanoag women launch their dugout canoe into the North River channel after the dedication ceremony. The 350-pound canoe was made from a large white pine tree by members of the tribe and is handcrafted using native methods.

Through the morning mist on the North River, a group of Wampanoag Indians could be seen silently paddling their canoes past salt marsh and woodland.

Does it sound like something that could only have happened hundreds of years ago? It was August 28, 1976.

On this day, Drifting Goose (Ellsworth Oakley, Jr.), Supreme Sachem of the Wampanoag Federation, led the ceremony dedicating the Wampanoag Sachems Canoe Passage to the memory of the great past Wampanoag leaders, especially Massasoit, the Supreme Sachem of the Wampanoag Federation who was among the first to greet the Pilgrims, and to his two sons who succeeded him, Wamsutta and Metacomet (King Philip). Two young tribal members were first to launch their canoe, handcrafted from a large white pine tree.

A year earlier, the Mashpee Wampanoag Tribal Council and the Plymouth County Development Coun-



cil in southeastern Massachusetts had wanted to restore the historic 70-mile waterway. It winds its way from Scituate on Massachusetts Bay to Dighton Rock State Park on the Taunton River and flows into Narragansett Bay.

They wanted to preserve the scenic canoe passageway that the Wampanoag Indians had used as long as 300 years ago and reopen it to canoeists. The 16 communities along the meandering passage supported the project.

The Pilgrim Resource Conservation and Development (RC&D) Area Council made the restoration of the passage part of the area's RC&D plan. The Soil Conservation Service, through the RC&D office, prepared a map of the canoe passage, located trouble spots—rocks, white water, and shallow areas—and obstacles at portages, provided soil and water resource information, coordinated the work on the project, and recommended future sites for camping, scenic areas, and rest stops.

The Plymouth County Development Council, in cooperation with many other local agencies, organizations, groups, and individuals, prepared a brochure which gives a brief history of the passage and includes detailed maps of the watercourse. It is a guide to portages, camping areas, points of interest, and trouble spots along the waterway.

There is easy access to the passage at many points. It can be explored in day or half-day trips or for just an hour or two. It would take 3 to 5 days to cover the entire route depending on the tide and water level.

Indian trails, colonial cemeteries, and the sites of shipyards dating back to the 1600's are along the banks of the Wampanoag Sachems Canoe Passage. Canoeists glide past areas of rushes and reeds and through brooks with overhanging branches and underwater beaver dams. They also paddle past superhighways. Occasionally a deer has been sighted, and several foxes and a multitude of herons, partridges, frogs, snapping turtles, muskrats, and ducks are commonly seen along the passage.

Amelia Bingham of Mashpee, a member of the Massachusetts Commission of Indian Affairs, the Pilgrim RC&D Area Human Resources Committee, and the Mashpee Wampanoag Tribe, said, "Through this canoe passage, southeastern Massachusetts offers everyone an opportunity to step back into the past and experience the marvels of nature."

Mr. Reese is RC&D coordinator, SCS, Raynham, Mass.

Photos courtesy Plymouth County Development Council, Inc.

Canoeists begin their trip following the ceremony. It would take them from 3 to 5 days to travel the entire 70-mile waterway.

Drifting Goose (Ellsworth Oakley, Jr.) reenacts the peace pipe or calumet ceremony at the dedication of the canoe passage.

Planned Grazing: A Beautiful System

A rancher in Arizona has increased his grass and cattle production, reduced erosion, and attracted more wildlife.

Tom Chacon, range conservationist, Sitgreaves National Forest (left), rancher Beverly Thomas, and David Somerville, SCS range conservationist, discuss the results of brush management and reseeding on Thomas' ranch.

by Doug Immekus

In Arizona, beauty can be found as a result of erosion. The Grand Canyon and Painted Desert were created through eons of geologic erosion. The wood in the Petrified Forest was revealed by the same process.

Unfortunately, accelerated erosion, usually caused by man's misuse of the land, has not resulted in similar majestic creations. Overgrazing of rangeland in Arizona has contributed to erosion and sedimentation. It has left much of the land depleted and scarred. Because of overuse, nature's original plants were replaced by others of little value for grazing or soil protection.

Hard rains on depleted lands ran off quickly taking tons of topsoil. Once-plentiful wildlife was reduced, and man struggled to make a living from what remained.

But some people realized that with hard work and a temporary reduction of income they could restore beauty and productivity to the land.

Beverly Thomas, of Navajo County, was one of those who accepted the challenge. Juniper and other unpalatable plants had replaced the grasses and shrubs that provided food for cattle and wildlife on his ranch. The sparse plant cover was an invitation to erosion.

As a cooperator with the Navajo County Natural Resource Conservation District, Thomas developed a plan for his State and private land in 1963. In 1964, when Thomas took over the Cottonwood Allotment from his brother, he and a Forest Service employee made an allotment analysis that showed just how much the range had deteriorated. They developed another plan for improving the land.

From 1965 to 1967, he managed his range using these two separate plans. Then realizing the necessity of managing the total ranch as one system, he requested the Soil Conservation Service and Forest Service to assist him in developing one coordinated plan.

A key feature of the coordinated plan, developed in 1968, was a four-pasture, single herd grazing system. In addition, brush management, range seeding, water development, and fencing were planned. Thomas said, "The plan has required a lot of work and money, but it was worth the effort.

"I remember when it used to take 15 cowboys to gather our cattle," he continued. "We used to have a real rodeo. Now it only takes me a day to move the cattle to the next pasture with my pickup, its horn, and a couple bales of hay for bait. Today when the cattle hear the horn, they know it's time to move."

His planned grazing system required 8½ miles of fence construction or repair. He had to cut his herd until new water facilities were developed and range seedings were established. The improvement costs and fewer animals created a hardship for 2 years. However, Thomas quickly built his herd back.

Between 1968 and 1976, brush management and range seeding were carried out on 12,000 acres. In addition, several stock water systems were installed, including a 20,000-gallon storage tank.

His biggest problem was finding financial help. "The Forest Service cost shared on a 50-50 basis some of the improvements on National Forest System land. The Agricultural Stabilization and Conservation Service cost shared water developments and brush management on the private and State lands. However, I had to pay half the cost."

Thomas is already counting the benefits. "My cattle are easier to handle because they are all in one pasture. I can brand, wean, and treat for disease and insects quickly with this system. As a result, my cow herd is improving, the calving percentage is up, weaning weights are heavier, and disease problems are down.

"In addition my supplemental feeding has been cut in half as a result of increased forage production," he said. "These benefits offset the sacrifices and work I had to do during the first few years.

"During the next 10 years, I feel sure my efforts will increase the value and returns of my operation. However, the benefits of this planned grazing system accrue not only to me, but also to the public, in increased wildlife and a more attractive landscape."

Mr. Immekus is district conservationist, SCS, Holbrook, Ariz.

Farmer Henry Hughes still uses his mule to do work his tractor can't do.

Long-Time Conservationists

Henry Hughes has held to some farming techniques for years. But when it comes to conservation, "my old-timey ways don't mean I have old-timey ideas."

Wally Morris thought he had retired. When the Forest Service needed conservation help, Wally was there.

Gladys Horn has been farming for 43 years. When some of her land developed gullies, she found out that it's never too late for conservation help.

Henry Hughes

by Gene Warren

Henry and Elva Hughes do things the old-fashioned way, but get modern results.

They bought their 40-acre farm near Livingston, La., in 1941 and "cleared the whole place with a double-bitted ax and a crosscut saw," according to Hughes. "It was a rough job, but I wouldn't trade this place for anything."

He walked through a sloping field of deep grass and clover where several fat cows grazed. "I've got this particular land in grass for a reason. When I originally was making my conservation plan, the Soil Conservation Service man pointed out that this land was too steep for crops."

Hughes is the Capital Soil and Water Conservation District's current Outstanding Conservation Farmer. The award cites his use of such conservation practices as crop rotation, use of crop residue, grazing rotation, and a farm pond for livestock water.

Half his land is used for 11 cows and

Wally Morris checks the growth of Austrian pine seedlings he planted 3 years ago. The trees are among those found at the Moses Lake Nursery he helped establish.

—courtesy, *Columbia Basin Herald.*

Hughes has half his land in improved pasture for his cows and the other half in truck crops.

the other half for a number of truck crops. Several acres are planted with shoe-peg corn, a special variety for which he has been saving seed for 37 years.

Most of the food Henry and Elva eat comes from their farm: chicken, pork, beef, milk, butter, eggs, more than two dozen vegetables and fruits, and fish from the pond. Much is processed with machines and tools the family has used for decades.

Hughes also has a number of "paying customers" who gather vegetables on his farm. "People take only what they pay for, and most folks come back year after year. Some come all the way from Baton Rouge, more than 40 miles, and get corn and peas," he said.

Although Hughes uses a tractor to prepare his land for planting, his mule "Mike" gets plenty of work. "A mule can do a lot that a tractor can't. When corn gets waist-high, that tractor would ride it down if I plowed through it," he said. "But old Mike just plods along doing what I ask him to."

After 36 years, Hughes says, he's learned a lot about the needs of his land. "My old-timey ways don't mean I have old-timey ideas. I work hard to do a good conservation job out here because it's right and because it pays in the long run."

Mr. Warren is public information officer, SCS, Alexandria, La.

Wally Morris

It looks like Wally Morris will never really retire.

On April 22, Morris, a soil conservation technician, retired after 28 years with the Soil Conservation Service at Moses Lake, Wash. The next day he was taking care of about 30,000 seedling pine trees that the Forest Service had intended to plant in northwest forests.

Drought conditions delayed planting, and Morris agreed to help the Forest Service by taking care of the trees through the delay.

Growing trees comes naturally to Morris who has helped beautify and protect his area of the Columbia Basin for almost 30 years through tree establishment programs that he helped initiate.

A coworker at the SCS district office said, "Wally has worked untiringly with many basin residents. If you're a farmer, he probably raised from seed the trees in your established windbreak; and if you're a Boy Scout, he probably helped you plant the willows and poplars that give shade at Potholes Reservoir."

Morris has done a lot of work on conservation education for youth. He has taken school children on field tours, appeared on a children's television program to talk about conservation, and worked with youth groups on conservation and public service projects.

For his work with the Boy Scouts, he received the Silver Beaver Award, the highest adult honor on the council level.

While Morris was chairman of camping and activities, the Columbia Basin District received the William T. Horna-

Gladys Horn and Bert Geswein, SCS technician, look over newly installed riser on her tile-outlet terraces.

As part of his work in conservation education, Morris appeared on the "Romper Room" show. He brought soil samples for the children to see and touch and gave them pine seedlings to plant and take home.

day Award from the Boy Scouts of America for distinguished service in conservation.

This year the Inland Empire Chapter of the Soil Conservation Society of America gave Wally Morris their 1977 plaque for his outstanding contribution to conservation and his help in establishing the district's Moses Lake conservation nursery.

Wally Morris has always been ready to help solve soil and water conservation problems.

Adapted from an article in the *Columbia Basin Herald*, Moses Lake, Wash.

Gladys Horn

by Michael M. Price

"People thought I was terribly foolish to spend my money on eleven terraces when I could use it to buy a nice car," said Gladys Horn, 78, of Clay City, Ind. Mrs. Horn had wanted the terraces since 1970 to halt severe erosion and flooding of her 60-acre farm.

A farmer's daughter, Mrs. Horn used to put up hay and drive her father's team of horses to disk the fields. "The hardest work I ever did was to replant corn with a hoe," she said.

In 1934 she inherited her father's farm. Together she and her husband farmed it until his death in 1968. Now a tenant farms her land.

Although the Horns had seeded some pastures, rotated crops, and leveled some of the land, several gullies developed on unprotected land—some so deep "you could hide a horse in them," she said.

"The soil kept washing down the slopes and across the road, filling my neighbor's roadside ditches with silt. One of my neighbors became very upset with me because water from my farm ended up on his land. So, he built a small levee to protect his place from my water," she said.

Mrs. Horn learned about the Soil Conservation Service and the Clay County Soil and Water Conservation District from local newspapers. She became a cooperator with the district and, with assistance from SCS, developed a conservation plan for her farm in 1972.

SCS provided technical assistance on survey and layout work for a series of terraces designed to hold water on the hills until it can drain slowly through tile outlets. Mrs. Horn's parallel tile-outlet terraces—built over a 5-year span—were the first such terraces in the county.

Mrs. Horn is pleased with the results of her long-awaited terraces. "In fact," she said, "the corn yield has doubled in some places on my farm."

Mr. Price is public information officer, SCS, Indianapolis, Ind.

A community in Arkansas—including bakeries, the telephone company, and a papermill—pitched in to help elementary school children create an outdoor classroom.

From Trash to Trail

by Elesa K. Tanprasert

During Terry School Work Day, students lined a nature trail with rocks. Each student who worked on the trail received a special nature badge.

Students at David Terry Elementary School in Little Rock, Ark., are getting a new classroom—in the woods.

What was once a trash-laden neglected acre-and-a-half is now an attractive outdoor classroom with a learning trail where more than 500 kindergarten through third grade children are finding out about their environment.

The project was started last September after Sandra Case, the City Beautiful Chairman for the school, first heard of outdoor classrooms and Soil Conservation Service help for teachers during a meeting of the city council in Little Rock.

Case discussed the idea of an outdoor classroom with the principal of Terry School, Charlsie Brown, who responded with such enthusiasm that Terry School this spring won a top award in the City Beautiful school category for having done the most to improve the school site.

"Work began last fall as soon as a technician from the SCS field office could meet with the teachers," Brown said. Following the site inventory, Sandra Case arranged for a visit to an outdoor classroom at another school to see the students in action and to gain ideas.

Several meetings were held to acquaint parents, faculty, and PTA board members with the project. A Terry School Work Day was set for October.

By the time the Work Day arrived, the learning trail had been blazed with the help of SCS conservationists, who had identified interesting learning sites, and Cub Scouts, who had cleared a path in preparation for Work Day activities.

More than 200 parents and children arrived early on Work Day with rakes, shovels, baskets, and lots of enthusiasm. As the adults removed trash and debris and stockpiled brush for wildlife, students gathered stones and outlined both sides of the trail. Woodchips from a local papermill were used to mulch the trail.

Several local bakeries donated cookies, cakes, and doughnuts for refreshments. Many families brought picnic lunches. Each of the students who worked on the trail received a special nature badge.

Two local television stations covered the scene for the evening newscast, interviewing students, parents, and teachers.

The Terry Primary Outdoor Study Area continues to grow with community help. The construction department of the local telephone company donated poles to be used for seats in the amphitheater. A local contractor provided a bulldozer to construct a low-water dam on the marshland study area. The Society of Older Workers volunteered their services to construct the amphitheater seats and three footbridges across the marsh. Several workers plan to come back and help when school starts in the fall. Pulaski Conservation District donated an entrance sign for the learning trail.

As teachers developed lesson plans and discovered new learning activities in the outdoor classroom, they taped these suggestions and placed them in the media center for use by other schools. A brochure is available for visitors to the nature trail.

The conservation plan for the school site includes planting projects for erosion control and wildlife. A geology wall and weather station are to be added to the outdoor classroom—a continuing project that will change and grow to meet the needs of future classes at Terry Elementary School.

Ms. Tanprasert is soil conservationist, SCS, Little Rock, Ark.

Until sand blowing from a commercial development site was tied down, it "blasted" paint off cars, ruined windshields, and proved a nuisance to an apartment complex.

Rescuing Barley Square

by Dale Allen

J. W. McDonald, SCS district conservationist, examines barley planted on a commercial development site to control wind erosion.

El Paso residents call it Barley Square. It's their nickname for a 20-acre commercial development site that was planted to barley to keep the sand from blowing.

Cover from the land was stripped by its developer when he graded the land early in 1974. Since average annual rainfall is only 7 inches per year in El Paso, it takes years to reestablish a natural cover of plants. And from November to May, the wind blows and blows—and blows some more. Blowing sand can ruin a windshield or an auto paint job in a matter of seconds.

It also can prove a confounded nuisance to a plush apartment complex, like the one across the street from Barley Square.

"We really caught the sand," recalled Ann Welch, manager of the complex. "In one day, it would pile up 3 feet deep on your front lawn. It took tractors, front-end loaders, and a dump truck to clean it up and haul it off."

She said the fine sand also found its way beneath windows into apartments facing the square.

Naturally, she complained. The developer tried to hold down the sand by wetting it with a sprinkler irrigation system. But the wet sand still blew—this time as mud onto passing cars. Then the El Paso police would tell him to shut down his sprinklers.

Local Soil Conservation Service District Conservationist J. W. McDonald came to the rescue. Under provisions of an El Paso grading ordinance, anyone who performs significant land grading must submit a grading plan to the city, and the city then issues a permit.

Grading plans for tracts of 25 acres or more are referred to the El Paso-Hudspeth Soil and Water Conservation District for review and comment. The district asks SCS people to study the plan, visit the site, and make recommendations for controlling erosion from wind and water. These suggestions are returned by the district to the city engineers.

Although developers are not required to follow SCS recommendations, many do so voluntarily, like the owner of Barley Square.

Since it was February, McDonald suggested that the developer plant his 20 acres to barley, a cool season grass. City water and a sprinkler irrigation system got the seed to germinate. In 2 weeks, the barley had produced enough cover to keep the sandy soil from blowing. Seven months later, the barley's dense, stiff stalks still had the soil tied down.

"Except for lawns," commented Ann Welch, "the new barley was the only green spot in town."

McDonald said that since the El Paso ordinance went into effect, some 80 grading plans have been submitted to the district for review.

"Either all or part of our recommendations have been carried out on about half the land affected," he reported. "While not perfect, it isn't a bad score for a voluntary program."

Mr. Allen is public information officer, SCS, Temple, Tex.

Windmill and drinking tank, once used for cattle, have been repaired for wildlife.

The National Rifle Association promotes good natural resource management using various conservation plans while teaching people about the use of firearms and gun safety.

Conservation Classroom for Gun Club Instructors

by Dick Barber

A rugged 57-square-mile "classroom" where students learn the proper use of firearms, wilderness survival, and conservation is open for business in northeastern New Mexico.

It is the National Rifle Association's (NRA) new National Range and Outdoor Center, used primarily to train marksmanship instructors for schools and clubs.

A tour of the center last April began just off State Highway 64, which forms much of the eastern boundary, several miles southwest of the town of Raton. My guide was Frank Foote, NRA field manager in the area.

Frank and I bounced along through gently rolling prairie covered with blue grama, western wheatgrass, and other native grasses. The small, unpaved road soon crossed the old Santa Fe Trail. Railroad grades, long abandoned, wandered off in a westerly direction. If we followed, they would lead to abandoned mines and timber landings in the canyons and foothills of the Sangre de Christo Mountains.

"A team of specialists evaluated sites in several States before we decided on this one in 1974," Frank said. "The Colfax County Soil Survey prepared by the Soil Conservation Service was the single most valuable tool the team had."

We passed areas once scarred with gullies. Banks had been recently sloped, and an arroyo had been graded and shaped into a natural looking drainageway. Young blades of grass were emerging through mulch applied after seeding, and Frank said he was hoping for rain.

"All this is a sample of the work we are doing in cooperation with the Colfax Natural Resource Conservation District," he explained.

"We also have a contract with more than 80 items under the Great Plains Conservation Program and have a basic conservation plan developed with SCS help."

The center is hunters' country. In the distance, we saw a herd of pronghorn antelope grazing. Frank promised that as we got closer to the mountains, we might spot a mule deer browsing on oak or buck brush or hiding among the pinon pine and juniper.

We drove through a large clearing, surrounded by native plants like yucca, cholla, rabbitbrush, and fourwing saltbush. This was to be the site of the 1977 NRA Instructor-Shooter School. The course includes instruction in rifle,

Frank Foote, NRA field manager, examines recently seeded drainageway for signs of grass.

One of the critically eroding areas at the center looks better after grading, shaping, and seeding under Great Plains Conservation Program contract.

pistol, shotgun, gunsmithing, reloading—and conservation.

We lunched at Willow Canyon with students in the Spring Survival Leadership Training School. They had just learned to make fires without matches or much of anything else. An instructor invited us to climb the mesa and watch the class devising and setting snares. Students are not limited to men; Audrie Brown of Connecticut called it "a great experience" as she smeared waterproofing on her boots.

We left Willow Canyon just ahead of a shower—perfect weather for a survival school. In other canyons nearby, a turkey hunt was in progress, with 50 percent success already reported, according to Frank. That was even better than last fall's 38 percent success on an elk hunt.

Our four-wheel drive vehicle began to climb through muddy roads. The pinon and juniper were left behind, and we saw thickets of ponderosa pine and a few firs.

An occasional stray cow shared the grazing on slopes with elk, deer, and antelope. Out of sight were their natural enemies: mountain lion, bobcat, and coyote. Stray cows and horses are all that remain of domestic animals; since they were removed by NRA, the forage has improved considerably.

Frank pointed to several water facilities for wildlife and said that more were on the way.

He said NRA is interested in good natural resource management as well as teaching the use of firearms and gun safety.

"Specifically we are concerned with wise land use, with conservation and improvement of wilderness, and with wildlife—enhancing its food and habitat and its proper harvest," he said. "This area gives us a wonderful opportunity to teach people about conservation."

Frank explained that NRA also is trying to interest more colleges and universities in using the center for resource management studies. Already using the facility are the University of New Mexico, Michigan State and Colorado State Universities, and Trinidad State Junior College. The center also is used for field training for the New Mexico National Guard.

Frank's relatively small staff is augmented by technical help from the New Mexico Game and Fish Department, SCS, and others. A resource inventory, conservation needs, and activity schedule are all contained in the NRA conservation plan.

"We plan a minimum of development," Frank said. "Some camping facilities are in the works, and the city of Raton had agreed to furnish domestic water through a pipeline to be installed. The city will recover the cost many times over through revenue from sales and other indirect taxes paid by participants in NRA activities.

"We've also completed about 100 acres of critical area erosion treatment and are installing net wire diversions for erosion control. Most of all, we want to protect the land from overuse. It took 20 miles of fence to do it, but we now have the entire unit fenced."

"To be effective advocates of proper land use and conservation," he said, "we can't just talk about it. We have to set a good example, and let our students see what we are doing—and live with it."

Mr. Barber is public information officer, SCS, Albuquerque, N. Mex.

New Publications

Retention of Agricultural Land

by the Soil Conservation Society of America

This is a collection of six articles reprinted from the *Journal of Soil and Water Conservation*. The articles focus on the effort to preserve prime farmland in the United States.

One article concerns the need for national guidelines in developing a useful definition of prime agricultural land for States and communities to use in making land use policy and legislation.

Two articles deal mainly with methods of government control of land use and the issues surrounding the development of effective land use policy and legislation, locally and nationally. They cover State planning and enabling acts, mandatory planning and zoning, preferential assessment, special permits, easements and development rights, and other alternatives.

Two other articles deal specifically with what New Jersey and California are doing to preserve their prime farmland and open spaces.

One article is about USDA's role in preserving prime farmland—collecting and interpreting resource data that others can use in making sound decisions about land use and the future of agricultural lands. It describes the Soil Conservation Service's important farmland inventory system and its use of an automated mapping system.

Photographs, tables, charts, and graphs illustrate the publication, and a list of references follows each article.

Copies of special publication No. 19 are available from the Soil Conservation Society of America, 7515 Northeast Ankeny Road, Ankeny, Iowa 50021. Single copies are $2. Prices differ for quantity orders.

Conservation Tillage: Problems and Potentials

by the Soil Conservation Society of America

This is a collection of 12 articles, most reprinted from the *Journal of Soil and Water Conservation*, that gives an overview of current efforts in conservation tillage.

One article concerns the need to make conservation tillage and other conservation measures an integral part of any land use system. Another article tells how conservation tillage has resulted in energy savings and how this savings can be expected to increase.

The other articles describe conservation tillage practices used in the eight farming regions of the United States and in eastern and western Canada. They cover varied aspects of conservation tillage including reduced-tillage planting, no-till planting; economics of no-tillage; insect management; weed control; tillage effects on erosion, water conservation, and fertilizer; crop response to tillage; selecting tillage tools; and problems with residue tillage.

Photographs, tables, and graphs illustrate the publication, and a list of reference works follows each article.

Copies of the special publication No. 20 are available from the Soil Conservation Society of America, 7515 Northeast Ankeny Road, Ankeny, Iowa 50021. Single copies are $3.50. Prices differ for quantity orders.

Trees, Soils, and People

by the Soil Conservation Service

This publication is a collection of six articles on trees and woodlands reprinted from *Soil Conservation* magazine. The articles are about managing woodland for improved timber production, for wildlife habitat, for recreation, and for esthetic value. They also cover forest-cutting and logging practices that help prevent erosion and improve water quality.

Single copies are available from local conservation district offices or from the Information Division, Soil Conservation Service, Room 0054-S, Washington, D.C. 20013.

'Cape' American Beachgrass

by the Soil Conservation Service

This full-color pamphlet explains and illustrates step-by-step how to plant and maintain 'Cape' American beachgrass. Planting 'Cape' has proved to be the most effective way to stabilize dunes and areas of shifting sand in coastal areas from Maine to North Carolina.

Single copies are available from local conservation district offices or from the Information Division, Soil Conservation Service, Room 0054-S, Washington, D.C. 20013.

Soil Erosion: Prediction and Control

by the Soil Conservation Society of America

This is a collection of the 42 papers presented at the National Soil Erosion Conference held at Purdue University in May 1976.

The book is dedicated to W. H. Wischmeier of USDA's Agricultural Research Service and Purdue University, now retired, who led a team of scientists in developing the universal soil loss equation. Several papers in the book deal specifically with the equation's application in different geographic areas and in a variety of land planning situations. Topics covered in the papers also include erosion research, erosion and sediment yield modeling, soil erosion control, and conservation needs.

Graphs, charts, tables, maps, and photos, illustrate the book and a list of references follows each paper.

Single copies are available from the Soil Conservation Society of America, 7515 Northeast Ankeny Road, Ankeny, Iowa 50021. Copies are $10; $7 in paper.

Conservation Means "Liquid Assets"

To the father and son team of Frank and Hal Holder, efficient use of irrigation water is like money in the bank.

Hal, who took over management of the 280-acre farm near Rocky Ford, Colo., from his father last March, has recently intensified his conservation efforts by obtaining a Great Plains Conservation Program (GPCP) contract through the East Otero Soil Conservation District.

Many water-saving techniques have been applied to the land in the past by Hal's father, a 28-year veteran of the produce business in the Rocky Ford area. Hal plans to add more.

According to Ben Berlinger, Soil Conservation Service range conservationist, Hal has done more than many farmers in the area on soil and water conservation. And the Holders' conservation plan could prove very beneficial with streamflow reports for the Arkansas River down to 50 percent of normal.

When Frank Holder purchased the acreage, it was quite different than it looks today. It included three separate farms, unleveled and unworked, and an old railroad spur.

Today the tracks are gone, the fields are level and bordered by concrete irrigation ditches, and the land is rich in pearl onions, lettuce, and alfalfa.

Among practices Hal intends to increase under his GPCP contract are land leveling, concrete ditch lining, and grade stabilization structures.

He will also seed several fields to grass and alfalfa to utilize the tailwater from irrigated onion fields.

Conservation practices completed and planned on the Holder farm could well mean money in the bank if the water outlook for the Arkansas Valley doesn't improve.

Adapted from an article in the *Arkansas Valley Journal*, La Junta, Colo.

Meetings:

September

25–28 American Society of Landscape Architects, Minneapolis, Minn.

24–27 Farm and Industrial Equipment Institute Convention, Hot Springs, Va.

25–29 International Grain and Forage Harvesting Conference, Ames, Iowa

28 Clean Community System National Seminar, Keep America Beautiful, Inc., Washington, D.C.

October

2–6 Congress for Recreation and Parks, Las Vegas, Nev.

2–6 National Association of County Agricultural Agents, Hartford, Conn.

2–7 Water Pollution Control Federation Conference, Philadelphia, Pa.

8–12 American Institute of Planners Conference, Kansas City, Mo.

14–20 National Environmental Sanitation and Maintenance Educational Conference, Exposition, Lake Buena Vista, Fla.

15–19 American Bankers Association, Houston, Tex.

16–19 American Forestry Association, Monterey, Calif.

20–23 National Association of Biology Teachers, Inc., Anaheim, Calif.

25–29 American Horticultural Society Conference, Pasadena, Calif.

27–28 American Association for Vocational Instructional Material, Fargo, N. Dak.

29–Nov. 2 Adult Continuing Education National Conference, Detroit, Mich.

31–Nov. 2 American Association of State Highway and Transportation Officials, Atlantic City, N.J.

November

6–9 Irrigation Association Convention, New Orleans, La.

7–9 Geological Society of America, Seattle, Wash.

8–11 Future Farmers of America, Kansas City, Mo.

13–16 National Forest Products Association, San Diego, Calif.

13–17 American Institute of Chemical Engineers, New York, N.Y.

13–18 American Society of Agronomy, Los Angeles, Calif.

13–18 Soil Science Society of America, Los Angeles, Calif.

14–22 The National Grange, Greensboro, N.C.

15–16 Purdue Air Quality Conference and Exhibition, Indianapolis, Ind.

22–26 National Council for Geographic Education, St. Louis, Mo.

29–Dec. 1 Western Forestry and Conservation Association Conference, Seattle, Wash.

30–Dec. 2 Keep America Beautiful, Inc., National Meeting, New York, N.Y.

Moving?

Send present mailing label and
new address including zip code to:

U.S. Department of Agriculture
Soil Conservation Service
P.O. Box 2890, Room 0054-S
Washington, D.C. 20013

Official Business
Penalty for private use, $300

Controlled Circulation
Postage Paid in
Washington, D.C.

AGR 101